# SUNSET HEIGHTS WATER DISTRICT (PWS 7300050)
# SOURCE WATER ASSESSMENT FINAL REPORT

**April 25, 2003**

**State of Idaho**
**Department of Environmental Quality**

## Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. This assessment is based on a land use inventory of the designated source water assessment area and sensitivity factors associated with the spring and aquifer characteristics.

This report, *Sunset Heights Water District, Salmon, Idaho, Source Water Assessment Report* describes the public drinking water system (PWS), the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

Final spring water susceptibility scores are derived from heavily weighting potential contaminant inventory/land use scores and adding them with system construction scores. Therefore, a low rating in one category coupled with a higher rating in the another category results in a final rating of low, moderate, or high susceptibility. Potential contaminants are divided into four categories: inorganic chemical (IOC) contaminants (e.g., nitrates, arsenic), volatile organic chemical (VOC) contaminants (e.g., petroleum products), synthetic organic chemical (SOC) contaminants (e.g., pesticides), and microbial contaminants (e.g., bacteria). As a well or spring can be subject to various contamination settings, separate scores are given for each type of contaminant.

The Sunset Heights Water District drinking water system consists of one spring source. The SHWD Spring has a low susceptibility to all potential contaminant categories. The limited number of potential contaminants within the delineation of the spring area and the redevelopment of the construction of the spring in 1997 contributed to the overall low susceptibility of the system.

No VOCs or SOCs have been recorded for the SHWD Spring during any water chemistry tests. Total coliform bacteria were periodically detected in the distribution system between September 1993 and July 1996 with confirmed detections in December 1994 and March through August 1995. E.coli bacteria were detected in the distribution system in July 1995. Several single detections of total coliform bacteria have also been detected at the spring, indicating a possible existing pathway for contamination. Traces of the IOCs barium, fluoride, beryllium, and nitrate were detected in the system at levels below the maximum contaminant level (MCL). The radionuclides alpha and beta particles were also detected at low levels in the water system.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources. If the system should need to expand in the future, new well or spring sites should be located in areas with as few potential sources of contamination as possible, and the site should be reserved and protected for this specific use.

For the Sunset Heights Water District, drinking water protection activities should focus on correcting any deficiencies outlined in the sanitary survey (an inspection conducted every five years with the purpose of determining the physical condition of a water system's components and its capacity). Also, disinfection practices should be implemented if microbial contamination becomes a problem. No chemicals should be stored or applied within a 100-foot radius of the spring source. Since much of the designated protection areas are outside the direct jurisdiction of the Sunset Heights Water District, collaboration and partnerships with federal, state, and local agencies, and industry groups should be established and are critical to the success of drinking water protection.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan as the delineation is near federal grazing allotments and residential land uses. Public education topics could include proper lawn and garden care practices, household hazardous waste disposal methods, proper care and maintenance of septic systems, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. Though the transportation corridor (Highway 93) is about 1.7 miles from the delineation of the spring, the Idaho Department of Transportation could be involved in protection activities. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the Lemhi Soil and Water Conservation District, and the Natural Resources Conservation Service.

A community must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (e.g. zoning, permitting) or non-regulatory in nature (e.g. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Idaho Falls Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

# SOURCE WATER ASSESSMENT FOR THE SUNSET HEIGHTS WATER DISTRICT, SALMON, IDAHO

## Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this assessment means.** Maps showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are attached. The list of significant potential contaminant source categories and their rankings used to develop the assessment is also included.

### Background

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the EPA to assess every source of public drinking water for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area and sensitivity factors associated with the drinking water source and aquifer characteristics.

### Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, there is limited time and resources to accomplish the assessments. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a drinking water protection program should be determined by the local community based on its own needs and limitations. Wellhead or drinking water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

## Section 2. Conducting the Assessment

### General Description of the Source Water Quality

The public drinking water system for the Sunset Heights Water District is comprised of a spring that serves approximately 120 people through 49 connections for community use. Situated in Lemhi County, the SHWD Spring is located approximately seven miles south of the City of Salmon and approximately two miles east of Highway 93 and the Salmon River (Figure 1).

Water from the spring is gravity-fed to two 13,500-gallon underground storage tanks. The upper reservoir provides water to half of the service connections and to the lower reservoir. The water is disinfected immediately after flowing from the upper reservoir by a chemical-metering pump that adds chlorine to the system. There are no pumps or boosters on the distribution system. All of the water is delivered to consumers by gravity-feed.

There are no current significant potential water problems affecting the Sunset Heights Water District. No VOCs or SOCs have been recorded for the SHWD Spring during any water chemistry tests. Total coliform bacteria were periodically detected in the distribution system between September 1993 and July 1996 with confirmed detections in December 1994 and March through August 1995. *E.coli* bacteria were detected in the distribution system in July 1995. Several single detections of total coliform bacteria have also been detected at the spring, indicating a possible existing pathway for contamination. Traces of the IOCs barium, fluoride, beryllium, and nitrate were detected in the system at levels below the MCL. Alpha and beta particles (radionuclides) were detected at low levels in the water system.

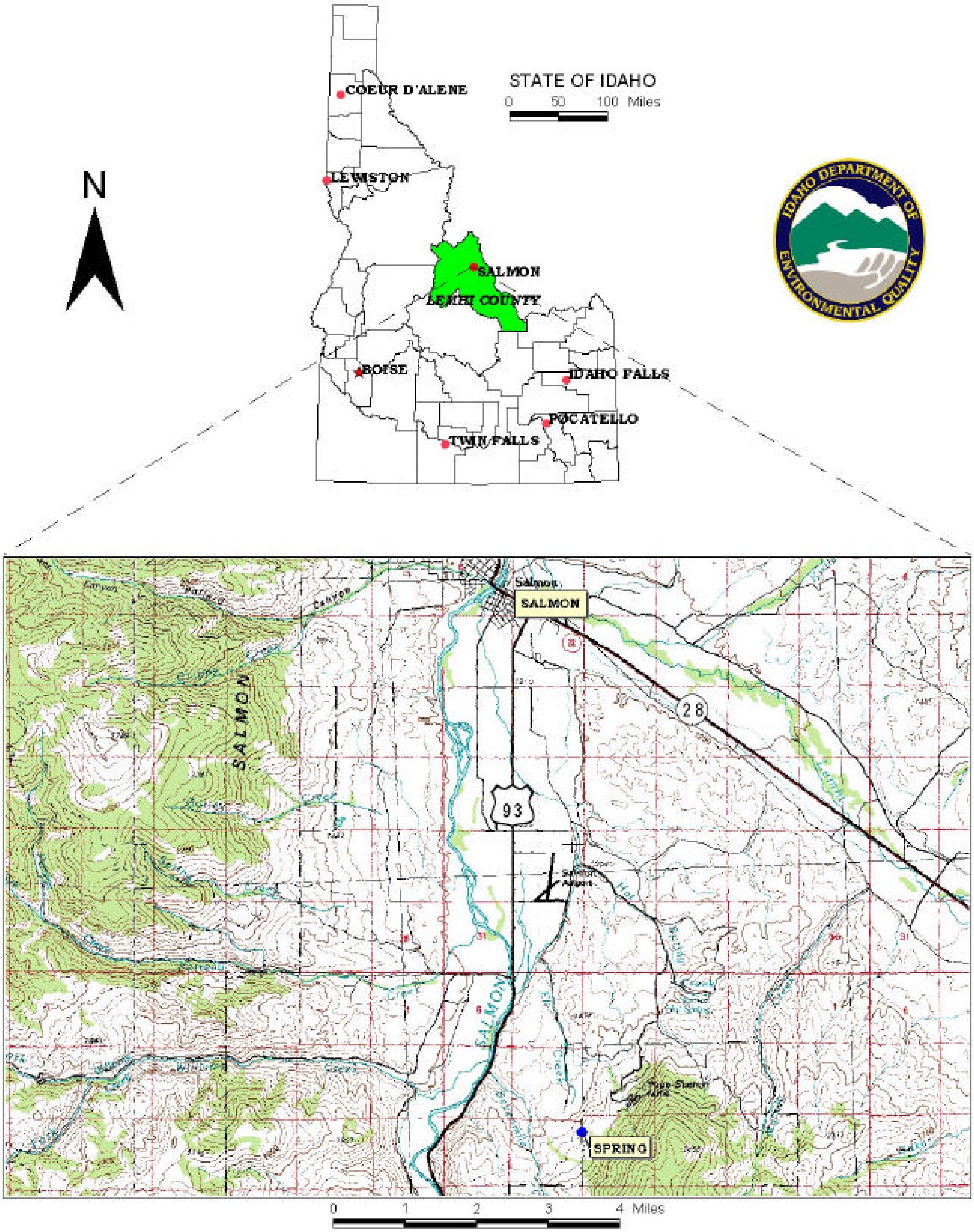
### Defining the Zones of Contribution – Delineation

The delineation process establishes the physical area around a drinking water source that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel (TOT) zones (zones indicating the number of years necessary for a particle of water to reach a drinking water source) for water in the aquifer. DEQ contracted with Washington Group, International (WGI) to perform the delineation using a calculated fixed radius model approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) TOT zones for water associated with the None hydrologic province in the vicinity of the Sunset Heights Water District. The computer model used site specific data, assimilated by WGI from a variety of sources including the Sunset Heights Water District operator input, local area well logs, and hydrogeologic reports (detailed below).

### None Hydrogeologic Conceptual Model

Graham and Campbell (1981) identified and described 70 regional ground water systems throughout Idaho. Thirty-four of these fall within the southeastern part of the state. The “None” hydrologic province, as defined in this report, includes all the area outside of the 34 regional systems in southeast Idaho. The smaller and more localized aquifers in the “None” province typically are situated in the foothills and mountains that surround and recharge the regional ground water systems.

***FIGURE 1. Geographic Location of Sunset Heights Recreational Subd***



The mountains and valleys within the "None" hydrologic province were formed during two events separated by approximately 50 to 70 million years (Alt and Hyndman, 1989, pp. 329 and 336). The overthrust belt of the northern Rocky Mountains was formed roughly 70 to 90 million years ago through the intrusion of granitic magma and a massive eastward movement of large slabs of layered sedimentary rocks along faults that dip shallowly westward (Alt and Hyndman, 1989, p. 329). This movement caused extreme folding and fracturing of the sedimentary and granitic rocks and, in many cases, left older formations lying on top of younger ones. Later Basin and Range block faulting broke up the largely eroded Rocky Mountains into large uplifted and downthrown blocks resulting in the present day northwest trending mountains and valleys seen throughout southeast Idaho. Paleozoic and Precambrian limestone, dolomite, sandstone, shale, siltstone, and quartzite are the predominant materials forming the mountains and probably compose the bedrock underlying the valleys between Salmon, Idaho on the north side of the Snake River Plain and Franklin, Idaho near the Utah/Idaho border (Dion, 1969, p.18; Kariya et al., 1994, p. 6; Bjorklund and McGreevy, 1971, p. 12; and Parliman, 1982, p. 9).

Ground water movement in the mountains is primarily through a system of solution channels, fractures and joints that commonly transmit water independently of surface topography (Bjorklund and McGreevy, 1971, p. 15; Dion, 1969, p. 18). Ralston and others (1979, pp. 128-129) state that the geologic structural features also can contribute to the development of cross-basin ground water flow systems. Ground water entering a geologic formation tends to follow the formation because hydraulic conductivities are greater parallel to the bedding planes than across them. Synclines and anticlines provide structural avenues for ground water flow under ridges from one valley to another.

There is little available information on the distribution of hydraulic head and the hydraulic properties of the aquifers in the "None" hydrologic province. No U.S. Geological Survey (2001) or Idaho Statewide Monitoring Network (Neely, 2001) wells are located in the areas of concern to provide information on ground water flow direction and hydraulic gradient or to aid in model calibration. The information that is available indicates that the hydraulic properties are quite variable, even within a specific rock type. Ralston and others (1979, p. 31), for example, present hydraulic conductivity estimates for fractured chert ranging from 2.2 to 75 feet per day (ft/day). Estimates for phosphatic shale are as low as 0.07 ft/day (unfractured) and as high as 25 ft/day (fractured).

## Springs and Spring Delineation Methods

A spring is defined as a concentrated discharge of ground water appearing at the ground surface as flowing water (Todd, 1980). The discharge of a spring depends on the hydraulic conductivity of the aquifer, the area of contributing recharge to the aquifer, and the rate of aquifer recharge. PWS springs are generally perennial. Large seasonal changes in the discharge rates are an indication of a relatively shallow flow system. While most springs fluctuate in their rate of discharge, springs in volcanic rock (e.g., basalt) are noted for their nearly constant discharge (Todd, 1980).

Delineation of the drinking water protection area for a spring involves special consideration. Hydrogeologic setting is foremost among the factors that control the shape and extent of the capture zone. A spring resulting from the presence of a high permeability fracture extending to great depth will have a much different capture zone than a depression spring formed where the ground surface intersects the water table in an unconsolidated aquifer.

In many cases, however, the methods commonly used to delineate protection areas for watersupply wells are not applicable (Jensen et al., 1997). Application of the refined method using WhAEM (Kraemer et al., 2000), for instance, may not be appropriate for a fracture or tubular spring producing from an aquifer that displays a high degree of heterogeneity and anisotropy. Techniques that are most applicable to the springs within the scope of this report are the topographic, refined, and calculated fixed-radius methods. Hydrogeologic mapping techniques have been useful in characterizing the hydrogeologic setting and the zone of contribution to springs (Jensen et al., 1997, pp. 6-7). Other techniques such as tracer and isotope studies, potentiometric surface mapping, geochemical characterization, and geophysical survey interpretation require data that are not available without additional fieldwork.

The calculated fixed-radius method (IDEQ, 1997 p. 4-9) was used to delineate the SHWD Spring. The fixed radii for the 3-, 6-, and 10-year capture zones were calculated using equations presented by Keely and Tsang (1983) for the velocity distribution surrounding a source. This method was selected because the ground water flow systems in the mountains of Idaho are typically very complex and poorly characterized. Ground water infiltrating into folded, faulted, and fractured bedrock formations may recharge shallow localized systems with short flow paths and residence times or it may enter deeper intermediate or regional systems with longer flow paths and residence times. Unfortunately, there generally are no water level data with which to determine the flow direction and hydraulic gradient in the different aquifers. In the absence of water level data, the ground water flow direction and hydraulic gradient may differ greatly from one flow system to another, because of the existence of structural controls and heterogeneity.

The calculated fixed radius method was used to delineate the Sunset Heights Subdivision spring because of a lack of information in the area. The delineated area for the SHWD Spring can best be described as three concentric circles that cover an area of 15 acres for the 3-year TOT zone (Zone 1B), 19 acres for the 6-year TOT zone (Zone II), and 29 acres for the 10-year TOT zone (Zone III) (Figure 2). The actual data used by WGI in determining the source water assessment delineation area is available from DEQ upon request.

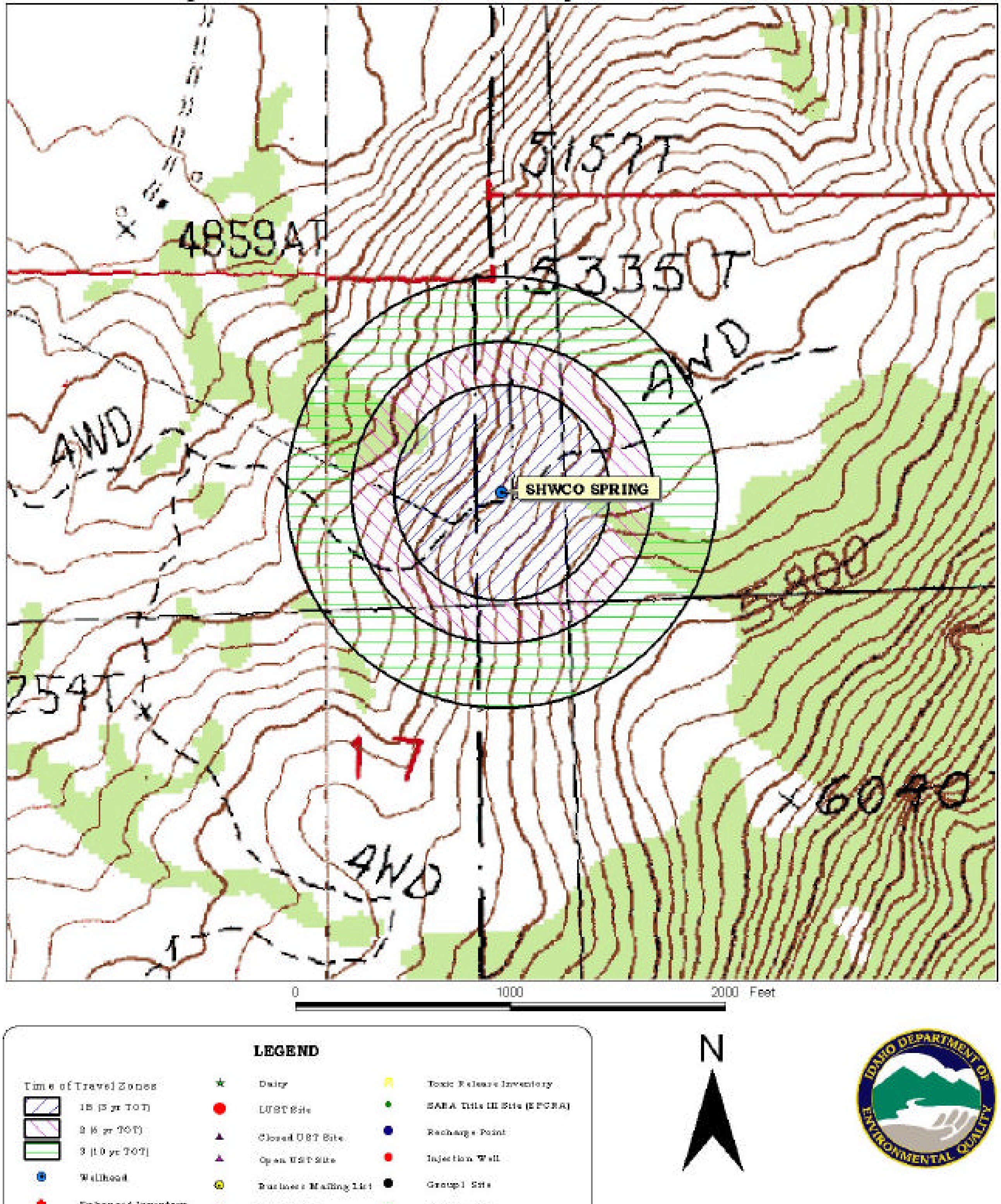
Provided operator information indicates that the annual flow of the spring is affected by precipitation and temperature fluctuation, possibly indicating connection to the watershed above the spring. If further information becomes available regarding the geology of the area or flow direction of the ground water, the delineation could be re-evaluated.

**Identifying Potential Sources of Contamination**

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and others, such as *cryptosporidium*, and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of groundwater contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

Land use within the immediate area and the surrounding area of the Sunset Heights Water District SHWD Spring is predominantly rangeland.

*FIGURE 2. Sunset Heights Recreational Subdivision Delineation Map and Potential Contaminant Source Locations*




**PWS# 7300050**
**SHWCO SPRING**

It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination, including educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water source.

### Contaminant Source Inventory Process

A two-phased contaminant inventory of the study area was conducted from August and September 2000. The first phase involved identifying and documenting potential contaminant sources within the Sunset Heights Water District Source Water Assessment Area (Figure 2) through the use of sanitary surveys, computer databases, and Geographic Information System (GIS) maps developed by DEQ. The second, or enhanced, phase of the contaminant inventory involved contacting the operator to identify and add any additional potential sources in the area.

The delineated source water area of the SHWD Spring encompasses a circular area of approximately 63 acres total east of Sevenmile Creek and southwest of the Pope Shenon Mine. The delineation only includes one unimproved road as a potential contaminant source. This road runs through the 3-year, 6-year, and 10-year TOT zones and could contribute general contaminants as well as Class II or III leachable contaminants (e.g. benzene, lead, arsenic, pesticides) to the aquifer in the event of an accidental spill, release, or flood (Figure 2).

## Section 3. Susceptibility Analysis

The spring's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: construction, land use characteristics, and potentially significant contaminant sources (Table 1). The land use and potential contaminant sources are heavily weighted in the final assessment, meaning that a low score in one category coupled with higher scores in the other categories can still lead to an overall susceptibility of high. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each drinking water source is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. Appendix A contains the susceptibility analysis worksheet for the system. The following summaries describe the rationale for the susceptibility ranking.

## Spring Construction

Spring construction scores are determined by evaluating whether the spring has been constructed according to Idaho Code (IDAPA 58.01.08.04) and if the spring's water is exposed to any potential contaminants from the time it exits the bedrock to when it enters the distribution system. If the spring's intake structure, infiltration gallery, and housing are located and constructed in such a manner as to be permanent and protect it from all potential contaminants, is contained within a fenced area of at least 100 feet in radius, and is protected from all surface water by diversions, berms, etc., then Idaho Code is being met and the score will be lower. If the spring's water comes in contact with the open atmosphere before it enters the distribution system, it receives a higher score. Likewise, if the spring's water is piped directly from the bedrock to the distribution system or is collected in a protected spring box without any contact to potential surface-related contaminants, the score is lower.

The Sunset Heights Water District Spring was developed in 1978 and redeveloped in 1997. The water from the spring is collected into four perforated 6-inch PVC collection pipes. The pipes are covered and packed in water bearing gravel and the gravel is covered and protected from surface water with an impervious liner and natural soils. From the collection pipes, the water flows into a concrete spring box with a slanted metal vented roof and two locking metal access doors. The collection area is fenced to restrict access of livestock. The fence was completed in September 2002.

The spring rated low for system construction (Table 1). Positively affecting the score is the fact that water destined for the distribution system is collected from underground and enters the distribution system without contacting the atmosphere. There is a collection trench that is used to divert surface water or runoff water away from the spring house to avoid contamination.

## Potential Contaminant Source and Land Use

The Sunset Heights Water District Spring rates low for all potential contaminants due to the limited number of contaminants that surround the spring area. The rangeland and undeveloped land that surrounds the area of the spring also contributed to the low land use scores.

## Final Susceptibility Rankings

A detection above a drinking water standard MCL, any detection of a VOC or SOC, or a confirmed microbial detection at the wellhead or the spring will automatically give a high susceptibility rating to the well or the spring, despite the land use of the area, because a pathway for contamination already exists. Additionally, if there are contaminant sources located within 50 feet of the wellhead or 100 feet of the spring source then the drinking water source will automatically get a high susceptibility rating. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0- to 3-year time of travel zone (Zone 1B) and agricultural land contribute greatly to the overall ranking. In terms of total susceptibility, the Sunset Heights Water District Spring rates low susceptibility to all potential contaminant categories.

**Table 1. Summary of Sunset Heights Water District Susceptibility Evaluation**

| Source | Susceptibility Scores[1] | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Contaminant Inventory | | | | System Construction | Final Susceptibility Ranking | | | |
| | IOC | VOC | SOC | Microbials | | IOC | VOC | SOC | Microbials |
| City Spring | L | L | L | L | L | L | L | L | L |

[1]**H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility,**
**IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical**

### Susceptibility Summary

Overall, the SHWD Spring has a low susceptibility to all potential contaminant categories. The limited number of potential contaminants within the delineation of the spring area and the redevelopment of the construction of the spring in 1997 contributed to the overall low susceptibility of the system.

There are no current significant potential water problems affecting the Sunset Heights Water District. No VOCs or SOCs have been recorded for the SHWD Spring during any water chemistry tests. Total coliform bacteria were periodically detected in the distribution system between September 1993 and July 1996 with confirmed detections in December 1994 and March through August 1995. *E.coli* bacteria were detected in the distribution system in July 1995. Several single detections of total coliform bacteria have also been detected at the spring, indicating a possible existing pathway for contamination. Traces of the IOCs barium, fluoride, beryllium, and nitrate were detected in the system at levels below the MCL. Alpha and beta particles (radionuclides) were also detected at low levels in the water system.

## Section 4. Options for Drinking water protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective drinking water protection program is tailored to the particular local drinking water protection area. A community with a fully developed drinking water protection program will incorporate many strategies. For the Sunset Heights Water District, drinking water protection activities should focus on correcting any deficiencies outlined in the sanitary survey. No chemicals should be stored or applied within a 100-foot radius of the spring source. Since much of the designated protection areas are outside the direct jurisdiction of the Sunset Heights Water District, collaboration and partnerships with federal, state, and local agencies, and industry groups should be established and are critical to the success of drinking water protection.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan as the delineation is near to urban and residential land uses. Public education topics could include proper lawn and garden care practices, household hazardous waste disposal methods, proper care and maintenance of septic systems, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. Though the transportation corridor (Highway 93) is about 1.7 miles from the delineation of the spring, the Idaho Department of Transportation could be involved in protection activities. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the Lemhi Soil and Water Conservation District, and the Natural Resources Conservation Service.

A community must incorporate a variety of strategies in order to develop a comprehensive source water assessment protection plan, be they regulatory in nature (e.g. zoning, permitting) or non-regulatory in nature (e.g. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Idaho Falls Regional Office of the DEQ or the Idaho Rural Water Association.

## Assistance

Public water supplies and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

| | |
|---|---|
| Idaho Falls Regional DEQ Office | (208) 528-2650 |
| State DEQ Office | (208) 373-0502 |

Website: http://www.deq.state.id.us

Water suppliers serving fewer than 10,000 persons may contact Melinda Harper (mlharper@idahoruralwater.com), Idaho Rural Water Association, at 1-208-343-7001 for assistance with drinking water protection (formerly wellhead protection) strategies.

# POTENTIAL CONTAMINANT INVENTORY
# LIST OF ACRONYMS AND DEFINITIONS

**AST (Aboveground Storage Tanks)** – Sites with aboveground storage tanks.

**Business Mailing List** – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

**CERCLIS** – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as Superfund is designed to clean up hazardous waste sites that are on the national priority list (NPL).

**Cyanide Site** – DEQ permitted and known historical sites/facilities using cyanide.

**Dairy** – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

**Deep Injection Well** – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

**Enhanced Inventory** – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

**Floodplain** – This is a coverage of the 100year floodplains.

**Group 1 Sites** – These are sites that show elevated levels of contaminants and are not within the priority one areas.

**Inorganic Priority Area** – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

**Landfill** – Areas of open and closed municipal and non-municipal landfills.

**LUST (Leaking Underground Storage Tank)** – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

**Mines and Quarries** – Mines and quarries permitted through the Idaho Department of Lands.)

**Nitrate Priority Area** – Area where greater than 25% of wells/springs show nitrate values above 5mg/L.

**NPDES (National Pollutant Discharge Elimination System)** – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

**Organic Priority Areas** – These are any areas where greater than 25% of wells/springs show levels greater than 1% of the primary standard or other health standards.

**Recharge Point** – This includes active, proposed, and possible recharge sites on the Snake River Plain.

**RICRIS** – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

**SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities)** – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

**Toxic Release Inventory (TRI)** – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

**UST (Underground Storage Tank)** – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

**Wastewater Land Applications Sites** – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

**Wellheads** – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

**NOTE:** Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

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# Appendix A

# Sunset Heights Water District Susceptibility Analysis Worksheet

## Susceptibility Analysis Formulas

**Formula for Spring Sources**

The final spring scores for the susceptibility analysis were determined using the following formulas:

1. VOC/SOC/IOC/ Final Score = (Potential Contaminant/Land Use X 0.6) + System Construction

2. Microbial Final Score = (Potential Contaminant/Land Use X 1.125) + System Construction

Final Susceptibility Scoring:

0 - 7 Low Susceptibility

8 - 15 Moderate Susceptibility

≥ 16 High Susceptibility

Surface Water Susceptibility Report    Public Water System Name : SUNSET HEIGHTS WATER DISTRICT : SHWD SPRING
Public Water System Number 7300050    2/5/03 1:45:37 PM

## 1. System Construction

| | | SCORE |
|---|---|---|
| Intake structure properly constructed | YES | 0 |
| Is the water first collected from an underground source<br>Yes= spring developed to collect water from beneath the ground; lower score<br>No = water collected after it contacts the atmosphere or unknown; higher score | YES | 0 |
| Total System Construction Score | | 0 |

## 2. Potential Contaminant / Land Use - ZONE 1A

| | | IOC Score | VOC Score | SOC Score | Microbial Score |
|---|---|---|---|---|---|
| Land Use Zone 1A | RANGELAND, WOODLAND, BASALT | 0 | 0 | 0 | 0 |
| Farm chemical use high | NO | 0 | 0 | 0 | |
| IOC, VOC, SOC, or Microbial sources in Zone 1A | NO | NO | NO | NO | NO |
| Total Potential Contaminant Source/Land Use Score - Zone 1A | | 0 | 0 | 0 | 0 |
| **Potential Contaminant / Land Use - ZONE 1B** | | | | | |
| Contaminant sources present (Number of Sources) | YES | 1 | 1 | 1 | 1 |
| (Score = # Sources X 2 ) 8 Points Maximum | | 2 | 2 | 2 | 2 |
| Sources of Class II or III leacheable contaminants or | YES | 1 | 1 | 1 | |
| 4 Points Maximum | | 1 | 1 | 1 | |
| Zone 1B contains or intercepts a Group 1 Area | NO | 0 | 0 | 0 | 0 |
| Land use Zone 1B | Less Than 25% Agricultural Land | 0 | 0 | 0 | 0 |
| Total Potential Contaminant Source / Land Use Score - Zone 1B | | 3 | 3 | 3 | 2 |
| **Potential Contaminant / Land Use - ZONE II** | | | | | |
| Contaminant Sources Present | YES | 2 | 2 | 2 | |
| Sources of Class II or III leacheable contaminants or | YES | 1 | 1 | 1 | |
| Land Use Zone II | Less than 25% Agricultural Land | 0 | 0 | 0 | |
| Potential Contaminant Source / Land Use Score - Zone II | | 3 | 3 | 3 | 0 |
| **Potential Contaminant / Land Use - ZONE III** | | | | | |
| Contaminant Source Present | YES | 1 | 1 | 1 | |
| Sources of Class II or III leacheable contaminants or | YES | 1 | 1 | 1 | |
| Is there irrigated agricultural lands that occupy > 50% of | NO | 0 | 0 | 0 | |
| Total Potential Contaminant Source / Land Use Score - Zone III | | 2 | 2 | 2 | 0 |
| Cumulative Potential Contaminant / Land Use Score | | 8 | 8 | 8 | 2 |
| **4. Final Susceptibility Source Score** | | 5 | 5 | 5 | 2 |
| **5. Final Well Ranking** | | Low | Low | Low | Low |